

W. O. Library

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FORESTRY



the State Forester's 1958 REPORT

E

J

W

R

Governor
Edmund G. Brown

Director of Natural
Resources,
DeWitt Nelson

1958

ANNUAL REPORT

of the

CALIFORNIA DIVISION OF FORESTRY

F. H. Raymond

State Forester

The State Board of Forestry

E. Domingo Hardison, Chairman
Santa Paula

John Baumgartner, Jr.
San Martin

W. B. Carter
Lancaster

Russel H. Ells
Willits

E. P. Ivory
Visalia

J. J. Prendergast
Redlands

Kenneth R. Walker
Atherton

Director of Natural
Resources,
Dewitt Nelson

Governor
Edmund G. Brown

1958
ANNUAL REPORT
of the
CALIFORNIA DIVISION OF FORESTRY

P. H. Raymond
State Forester

The State Board of Forestry

E. Douglas Harrison, Chairman
Santa Paula

E. P. Ivory
Visalia

J. A. Prendergast
Redlands

Kenneth R. Walker
Alhambra

John Baumgartner, Jr.
San Martin

W. B. Carter
Lancaster

Russell H. Ellis
Willits

California Division of Forestry
1958 ANNUAL REPORT

The Board of Forestry

In January the State Board of Forestry elected as its chairman Wendell T. Robie of Auburn who sat as a representative of the forest land ownership. Mr. Robie was a veteran of 17 years service on the Board. He replaced William S. Rosecrans of Los Angeles who had served as chairman for 14 years. E. Domingo Hardison was made vice chairman. On January 15, W. B. Carter of Lancaster was appointed by Governor Knight as representative of the public at large in the place of W. S. Rosecrans, resigned.

Throughout the year the Board held regular meetings each month except in March. Meetings were held in several cities, north and south, to consider the special public forestry problems of the several geographic regions. Field trips into pine and redwood logging areas were also undertaken. Much routine official business was conducted relating to such affairs as an extension of the Division fire protection plan, the appointment and reporting of several honorary special committees advisory to the Board, and the formal hearings of lumber operators as prescribed by the Forest Practice Act.

One of the major accomplishments was the careful consideration and adoption of each of the several items to be included in an "Informational Manual" of Board policies. This master declaration of key planks of California forest policy is in fact an implementation of California law for the advice of the general public and the guidance of the Division of Forestry. Such basic matters as the classification of forest and watershed lands, the relationship of the Division to the Federal Government and other agencies of government in fire protection and pest control, the State forest

nursery policy, the enforcement of Forest Practice Rules, and other similar policy items were studied and formally adopted.

One important matter involved reaffirming guidelines, originally adopted in 1953, for determining maturity of timber for taxation purposes in accordance with the State Constitution. Currently, the question of timber maturity is under study by the School of Forestry, University of California, as a special project originated at the behest of the interested parties involved in the taxation law, including the timber industry. In respect to Board of Forestry responsibility under the Constitution, the Board selected member Russell H. Ells to act as its representative upon the constitutional taxation committee in the counties of Del Norte, Humboldt, Mendocino and Sonoma.

John Baumgartner Jr. was requested to represent the Board at hearings conducted by the State Senate Interim Committee on Economic Re-development of Cut-over Timber Areas and Brush Lands. Mr. Robie was delegated to speak for the Board at a U. S. Senate Committee hearing on the so-called "Wilderness Bill" at San Francisco. The Board resolved that passage of the bill should be delayed to allow for more studied consideration.

On December 11 at San Francisco at a Western Forestry and Conservation Association gathering the Board met with State Foresters or other representative officials of the States of Nevada, Oregon, New Mexico, Montana, Idaho, Washington, Utah, South Dakota and the Province of British Columbia. Several Division staff members made brief presentations on technical aspects of forest fire control and other forestry programs being used and developed in California.

The Forest Fire Situation

In 1958 Division forces attended more forest and watershed fires than had ever before been recorded. There were 3,088 such fires during the calendar year. This was 47% above the 10-year average annual number. During 1958 there occurred probably the heaviest lightning activity known



to the State of California. Several people were killed and some 2,000 fires were ignited by lightning strikes throughout the entire State. The 474 lightning-caused fires suffered by the Division contributed to the high total, although weather conditions fortunately were such that few of these fires gained headway. In spite of the great number of fires, the area burned was not greater than the average annual loss. 146,121 acres of timber, watershed and rough range lands under State protection were burned over. There were, however, 99 fires larger than 300 acres. In fact, these large fires burned 73.3% of the total, which indicates again that control of every fire before it becomes large should be the



primary goal of planned fire protection.

Southern California had a good record until the severe dry winds in November and December made conditions so hazardous that the Director of Natural Resources deemed it necessary

to issue a proclamation forbidding the setting of fires except by written permit. Two very serious fires, mostly on National Forest land, occurred at this time.

The 3,088 watershed and forest fires mentioned above occurred throughout the zones of State and privately owned land designated by the Board of Forestry as possessing statewide public value and therefore being within an area given direct protection by the Division of Forestry. On the same lands there also occurred 1,119 structural type fires which were suppressed by State forces.

Division men and equipment also attended 8,202 fires on land not designated as having an inherent public value of a timber or watershed nature. This work was done as a contract service performed by the State for individual counties or fire districts.

Thus the State Division of Forestry during the year 1958 (exclusive of false alarm runs and assistance given to other fire protection agencies) attended a total of 12,409 fires wherein the Division assumed primary responsibility for fire suppression.

Total Forest and Watershed Fires in California: Number and Area Burned

On Area Protected by:

Region 5, U. S. Forest Service	2,296 fires	58,778 acres
National Park Service	103	48
County Fire Departments of:		
Los Angeles, Kern, Santa Barbara,		
Ventura, San Mateo and Marin	558	71,491
State Division of Forestry	<u>3,088</u>	<u>146,121</u>
Totals in 1958	6,045 fires	276,438 acres

Non-Federal Forest and Watershed Land Protected*

State or privately owned lands possessing a general public value in timber or watershed were protected from fire by the following agencies in 1958.

Division of Forestry**	19,812,141 acres
U. S. Forest Service	4,793,487
County Fire Depts. (see above)	3,210,724
Nat'l. Park Service	<u>4,025</u>
Total	27,820,377 acres

Rural and Structural Fire Protection

Fire protection for personal property possessing little general public value has always been recognized as a burden to be carried by the owner of the property, generally through the practical means of a local fire department supported by local taxes. However, long custom (authorized by law) has permitted the Division of Forestry to extend its State supported fire protection forces into rural areas and throughout the winter months to engage in this type of localized fire protection work. Through specific contracts with 23 counties an area of some 8,885,000 acres was covered by State protection during 1958. For this specified service the sum of two million dollars was paid into the State Treasury by the respective counties.

One unusual unit of structural protection coming under Division jurisdiction in 1958, by virtue of a contract with the California Olympic Commission, is the Squaw Valley winter community. To meet this responsibility the Division will provide an Associate and Assistant Ranger, five truck drivers and two fire trucks for full time duty.

*No segregation is made above in respect to the so-called Clarke-McNary zone for which the Fed. Gov't. contributes a portion of fire protection cost on State and private forest lands.

**Intermingled with these lands is an additional 3,597,253 acres of Federal land protected by the State, for which service the U. S. Gov't. makes reimbursement.

DIVISION OF FORESTRY BUDGET, 1958-59

General Support	\$15,489,975
For other agencies protecting private and State forest land	2,221,324
Blister rust control	115,000
Emergency Fire Suppression Fund (as needed)	520,000
Insect control	35,000
Forest and Fire research	<u>266,762</u>
	\$18,648,061*
Capital Outlay	\$ 2,982,356**

*In the total sum available for operations, there is included \$1,245,400 anticipated Federal Aid.

Not included above are receipts paid into the General Fund for the sale of forest products amounting to \$561,652. Also not represented are the funds spent and their reimbursement to the extent of \$2,000,000 received by the State in the performance of structural and rural fire protection for counties under the terms of formal agreement.

**Capital construction appropriations are expendable during a 3 year period.
Of the above sum \$1,885,930 is marked for CDC and CYA work camp construction.



The Field Organization

Other than personnel of the ranger classes engaged primarily in fire control supervision, the Division of Forestry maintained 230 forest fire crew stations at fixed points during the fire season. These crews were of five size classes in which 4 to 13 men were employed, with the majority using 9 men in a crew unit. This required the employment of 398 Foremen, 247 Fire Truck Drivers, and 114 Equipment Operators on a yearlong basis, and 1,178 Firefighters during the variable fire seasons throughout the State. Mostly on a seasonal basis 206 Camp Crew Cooks were employed. In 82 lookout stations a total of 119 observers were required. (At three stations the observer also acted as a local patrolman).

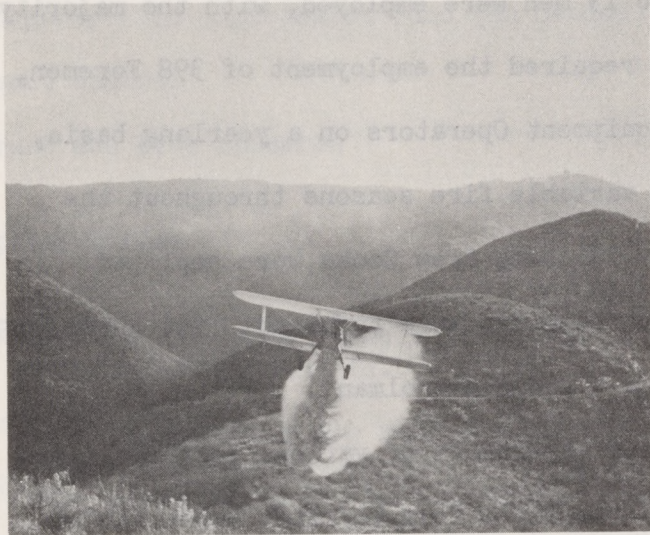
The Division operated 411 pumper firetrucks of various specifications and 49 bulldozers (plus another 23 available from Forestry Conservation Camps). To transport the bulldozers, 55 State-owned transport trucks were ready for action. In addition to numerous plows, tractors and other special equipment, the Division operated 104 sedans, 29 station wagons, 15 panel trucks, 211 pickups, 169 stakesides and 61 jeeps.

The above figures do not include substantial fire control forces represented by the Conservation Camp crews of inmates and wards of the Department of Corrections and Youth Authority working under Forestry supervision.

Entirely separate from and in addition to the organization established to attack forest fires (on the account books but not in the State dispatching system) are the 170 firetruck stations provided to suppress rural and structural fires for the several counties. Some of these trucks are owned by the State but most are county owned vehicles operated by State personnel.

Fire Suppression from the Air

No phase of the work of forest fire suppression during 1958 reflected so much of the interest, energy, and hope of the Division of Forestry as the newly introduced "initial attack air program." The idea of using aircraft to spray fire suppressants* or retardants upon



burning fuel, or fuel in the immediate path of running fire, was not exactly new. For a decade the problems involved in such a program had been weighed, and in Operation Fire-stop during 1954-56 numerous techniques had been tried by way of experimentation.

During the summer of 1958 the Division and the U. S. Forest Service engaged in the practical testing of air attack upon running fires by integrating aircraft units into the regular ground crew organization. In respect to the State agency specifically, the point to emphasize is that the performance of the air attack system was still under intense investigation during its practical use in fire control work. Ground forces were required to observe and report upon the practical functioning of aircraft being used on wildfires in conjunction with their own efforts. Many still and moving pictures, generally in color, were taken from the air and on

*A term coined to denote a substance capable of "suppressing" (i.e. extinguishing) fire.

the ground as part of the performance record. Throughout the summer some 650,000 gallons of chemical solution was "air-dropped" on, or immediately ahead of running fires by planes and pilots working under the direction of Division officers and hired under contract with the State. Assistance was also given the California Forest and Range Experiment Station in observations upon the effectiveness of the promising bentonite clay solution as a fire retardant.

There were three major zones of aircraft operation and two lesser zones set aside for testing of primary ("initial") fire attack. Regions not involved provided records of comparative accomplishment on the ground.

On the North Coast, two planes each at Ukiah and Hoberg's airports made 670 drops upon 72 individual fires. At Columbia in the Central Sierra, two aircraft made 113 drops on 13 fires. At Ramona in San Diego County, two planes made 182 drops on 45 fires. For shorter periods one plane at Sequoia Field in Tulare made 14 drops on 4 fires, and two planes based at Salinas made 28 drops on 6 fires.

Intensive studies of the effectiveness of this work are being undertaken. Briefly, it has been concluded specifically for the 127 fires that received first suppression action from the air, that a very important retarding result was gained upon 11 percent of the fires. Some definite retarding effect was observed upon 45 percent of the fires from the air action alone.

It must be reported with deep regret that six men were killed in crashes during the year's work, five of them flying for the U. S. Forest Service at the time. This tragic fact plus general observations of effectiveness has made it amply clear that special pilot skill and experience in this particular type of flying are factors of primary importance which must be considered in this latest advance in the difficult science of forest fire suppression.

Fire Prevention Work

Fires not caused by lightning are regarded as man-caused and therefore preventable. Unfortunately, the deliberate and sometimes malicious man-caused fires have been increasing during the past couple of years. In 1958, of the total forest and watershed fires attended by the Division, 9.6 percent were of incendiary origin. Of the careless type of forest fire, smokers started more than 40 percent, and careless burners of brush and debris another 20 percent. It is interesting to observe that time and a concentration upon the problem have reduced three former major causes of forest fires to very minor places, percentagewise, at the present day. Forty years ago, lumber operators, railroads and campfire builders were primary starters of careless fires. In spite of the hazardous locations and the recognized ease of accidental fires starting from such sources, the combined number of fires currently caused by these agents represents only 6 to 8 percent of the total of forest fires, and half of these are from the careless campfire builder. In the face of constantly increasing numbers of wildfires with the increasing population, the accomplishment of lumber industry as the leader in reducing lumbering fires is both remarkable and encouraging.

A very discouraging cause of fire is the child playing with matches or fire. A very serious watershed fire in Southern California originated from such a cause in 1958. On State protected lands 14 percent of all fires were child-caused. The discouraging feature, of course, lies in the difficulty of producing continuous education impressive enough to register on young minds.

In spite of the fact that 151,837 permits for citizens to burn waste material, and 448 range improvement permits were issued by Division personnel

it was deemed necessary to investigate the causes for 2,722 fires. Of these fires investigated, law enforcement action was initiated in 245 cases in which evidence indicated a violation of some fire prevention law, and in 337 cases action was taken to recover the cost of fire suppression from negligent persons. In 1958 the Division was fortunate in obtaining the services of a qualified attorney to supervise law enforcement operations as a regular member of the State Forester's headquarter's staff.

Since public education has long been recognized as the most important approach to establishing a general appreciation of the need for care in the use of fire, the Division personnel continued to bring the message to hundreds of thousands of persons with the help of every available communication medium and, of course, with the invaluable assistance of many enthusiastic cooperating agencies, private and public.

As an incident in the unceasing fire prevention educational campaign, State Forester Raymond in June of this year was tendered the national award of the American Association for Conservation Education for the Division's television production, "The Careless Crime."

Conservation Camps

Thirteen camps housing 795 selected adult prison inmates were operated co-operatively during 1958 by the Department of Corrections and Division of Forestry. Vallecito Conservation Camp in Calaveras County was opened this year and construction of three additional camps was initiated. In three Youth Authority Camps, from which three outlying "spike" camps are also operated, a total of 265 wards were housed to perform conservation work.

These 1,060 camp workers accomplished much valuable labor under supervision of the Division's 20 Work Project Supervisors and 120 Work Project Foremen. Undoubtedly, the 293,409 man-hours of labor of these workers in fighting forest and watershed fires would be regarded as their most important contribution during the season. In addition, their accomplishment was also very considerable in maintenance of the Division's 3,427 miles of fire road system, 2,208 miles of telephone line, and hundreds of miles of firebreaks. Much work was done in the growing and care of forest type planting stock in the Division nurseries at Magalia, Ben Lomond and Parlin Fork. At the camp shops a great deal of painting and general repair of automotive equipment and other property was accomplished, along with fabrication of fire fighting tools and accessories and mock-up designs of equipment being developed by Division engineers.

Conservation Camp
men at work



Emergency Planting of Burned Watersheds

The need of maintaining a protective cover of vegetation upon steep mountain slopes and erosive soil to soften and moderate the effect of heavy precipitation has long been appreciated in California, and especially in the southern part of the State. The primary object of watershed fire protection is to preserve the natural vegetation from destruction. When fires do burn over steep slopes where the hazard of heavy erosion is a great threat to life and property in the lowlands there have in recent years been some prompt plantings of mustard or grass seeds upon the burned areas in the hope that a light autumn rain would germinate the seed before the advent of heavy winter rainfall. Planting of tree species to regenerate a burned forest or to aid in the slow improvement of damaged watersheds is another valuable type of planting not, however, classified as being of this emergency nature.

There is no way of being assured how quickly the grass seeds will germinate or of the time and manner in which rain will fall on the exposed watershed. The decision which must be made by foresters is one of expending one to two dollars per acre in the seeding process as the last reasonable hope of preventing what experience has too often shown to be tragic and costly destruction from flood runoff and erosion debris. Because of the cost and uncertainty of success the State participates in emergency revegetation projects only if the potential damage could obviously be substantial and widespread and if local agencies or people join in the revegetation work.

Undoubtedly, a record in the size of total area seeded in this emergency type of planting was established in 1958 when a total of 51,276 acres of Federal land and 26,733 acres of State and private land, all in

Southern California, was seeded with two-thirds of a million pounds of annual rye grass on nine projects, at a cost of \$181,000. Of this sum the State contributed \$24,000 for the seeding of non-federal lands. Counties, water and soil conservation districts, and private persons contributed at least as much as the State. Helicopters were generally used to do the seeding on the slopes determined to be the greatest menace situated above the homes, towns and industrial property below. It remains for Nature in the form of rains during the next two or three winters to strike a balance of profit or loss in the emergency planting projects.

Range Improvement

The Division of Forestry became involved in experimentation and improvement of foothill livestock ranges essentially because fire has long been used as an important tool to remove brush and other low value vegetation or to change its composition. The position of the Division as established by the Legislature, requires that it enter into cooperative studies of methods of improving the range, in advising and guiding range land owners, in issuing permits to burn with recommendations to do so safely, and to be ready to combat fires which escape from the planned area.

In each of the six administrative districts of the Division at least one forester trained in range management spends his full time engaging in local investigative projects, in training Division field personnel in the administrative aspects of this particular work, and in consulting with ranchers.

During 1958, the Division received 571 applications to burn brushy

rangeland; 448 permits were issued, and 337 individual burns were conducted. Of the latter number it is interesting to observe that in 65 cases cooperative burning projects were arranged among neighboring ranchers in all of the range improvement burns, 150,564 acres were cleared by fire under permit and another 11,617 acres were burned by escape fire. Approximately one-half of the planned burning was a second or third burn conducted upon recently burned land in order to control young brush sprouts.

In the past 13 years of this range improvement project, records reveal that more than 1.5 million acres have been burned under permits issued by the State.

In 1958 nearly 43,000 acres, or some 25 percent of the burned area, was seeded after burning. While there is a great variability in the results of burning and subsequent land treatment throughout the very different geographic regions of California, it can be reasonably said that the most intensive treatment of land secures the highest economic benefit, sometimes remarkably so.

Studies lasting a few years or a decade are continuously being conducted in each of the major regions to advance our knowledge of some particular aspect of mountain range management. Generally these studies are undertaken cooperatively by the Division with agricultural specialists and the owners of the land. During 1958 seven such field studies were in operation. One project was closed during the year and three new ones initiated.

Small Watersheds

One of the most "cooperative" of government programs is that of developing dams and water distribution systems in small watersheds under the Federal "Small Watersheds Act." Every conceivable agency of government having some interest in soil or water seems to have a place in these relatively small

projects which can be of tremendous local importance. Essentially as an agent of the U. S. Forest Service, the Division of Forestry becomes involved in fire protection and land treatment projects on private lands situated within the particular watersheds being developed. One officer of the Division is fully occupied in meeting the State Forester's responsibility in the growing California program. Currently there are 44 small watersheds in which dams have been constructed or where water conservation systems are in some stage of development under this program. Nineteen applications for similar projects are being investigated.

Nurseries and Reforestation

During the 1958-59 production season the four Division nurseries produced about 3,200,000 trees. It is believed that another half million could have been distributed for forest planting work had the stock been available. Demands caused by the Federal Agricultural Conservation Program, a growing interest in planting within the timber industry, the newly expanding Christmas tree plantations, and several seasons of poor natural seed crops are recognized as the major reasons for the recent heavy demand for planting stock.

Forest industry is making increasing investment in forest regeneration by artificial planting, a form of longtime investment which has been considered extremely risky for many years due to the great mortality in much of the plantings of the past. Such fast-growing species as Monterey pine and eucalyptus are claiming increasing interest as an investment for future wood pulp material.

The Division grows and disposes of its planting stock at prices that offer incentive to bring idle lands back into production. Although orna-

mental stock may be produced for planting at public places, such as school grounds, the Division concentrates upon the production of tree species for forestry purposes on a quantity basis.

With other agencies, and independently, the Division conducts investigations for the improvement of nursery techniques and field planting. For example, with the advice of the U. S. Fish and Wildlife Service direct seeding methods which will outwit rodents and birds are being tested on State Forests. With the sum of \$10,000 appropriated to the Division for the purpose, the School of Forestry at Berkeley is undertaking a cooperative study of the physiology of planting stock for the purpose of determining the basic life requirements of various tree species under many conditions and treatments. Reforestation of poorly stocked cut-over lands is a subject of such economic importance in California that the 1957 Legislature enacted a law directing the State Forester to appoint an advisory reforestation committee and to proceed to study methods of accomplishing adequate reforestation. This committee was most active during 1958.

During the fiscal year beginning July 1957 the following forest areas were planted or seeded with tree species in California: on private lands, 1,819 acres; on non-Federal public lands, 132 acres, of which 49 acres were State Forest lands; on Federal land, 6,892 acres. In addition there were 243 acres of wind barriers planted, almost entirely on private lands.

Throughout all the potential forest lands of California at the present date it is estimated that some 45,000 acres have been planted on private holdings and 73,000 acres of Federal property. Measured against the estimated two million acres of "plantable" lands in private and State ownership, these figures indicate the formidable problems confronted in any artificial reforestation program which is subject to the summer climatic conditions of California.

Service Forestry

Throughout the entire Nation the total effect of the treatment of forest property in small land ownerships is of vital importance in the national economy. This is especially true because so much land is involved in the aggregate, and because forest management is so often a minor interest of land owners who are essentially farmers, miners, town dwellers or anything but forest land managers.

In California the forested land in single ownership blocks of less than 5,000 acres amounts to a total of 2.6 million acres. More and more, the necessity for, and the good work to be accomplished through the consultation of foresters with the "small woodland" owners is being proved.

The Division of Forestry employs nine service foresters to pursue this work, with the Federal Government assisting by paying a portion of their expense. In 1958, 1,600 requests for advice were received from landowners. On a total area involving 177,346 acres, 942 owners were given assistance toward the proper management of their forest property. Products harvested through methods advocated by State Service Foresters brought more than one million dollars to the landowners. On some larger ownerships or where a substantial profit was obvious, the owners of 29,000 acres of forest land were advised to obtain the service of professional private forest consultants.

In view of the forest plantings, the pruning of immature trees, the scientific thinnings in young stands and the 12,000 acres saved from premature cutting in 1958 because of the persuasion of the State Service Foresters, it can be declared with justifiable pride that the service forestry program is exceedingly worthwhile.

Pest Control

Estimates of timber losses from insect and disease generally indicate that forest fires are responsible for less, and often much less total damage, than the destructive pests. Fire, being spectacular, naturally registers most forcibly upon the public consciousness. Insects and disease in the forest must often be searched out before they become evident. Yet destructive epidemics start, just as do forest fires, from very small beginnings.

To organize the searching and reporting, several years ago the California Forest Pest Control Council was organized by representatives from public and private agencies concerned with forest lands or forest management. Each fall the Council meets to collect and study the statewide reports regarding infestations and infections and to report upon steps taken and proposed to abate the potentially dangerous pests. As an example, from Division of Forestry sources in 1958 a total of 98 "detection" reports were submitted to the Council.

Seven projects to control bark beetle infestations received direct Division support, either by its undertaking the field abatement work of treating trees, or by a proportionate payment to an agency more strategically located to perform the field work, such as the U. S. Forest Service. Where State owned land is involved the State assumes the full cost of abatement work. On private lands, when such work is deemed to be important, the State generally meets half the cost and conducts the project. For this type of work the Division spent the sum of \$28,000 in 1958.

White pine blister rust is a serious disease threat to California commercial

sugar pine timber. Since much of the vulnerable sugar pine is scattered among other species over wide areas, it is not economically possible to eradicate the host plant throughout the entire sugar pine region. Control zones have therefore been limited to the areas of most value and where continuous forest management will be practiced. State money contributions for blister rust control are handled upon the same basis as proportionate expenditures for insect control. During 1958 the sum of \$106,000 was made available through the Division for blister rust control. At the State's Magalia nursery cooperative assistance is being given the U. S. Forest Service in the development of sugar pine seedlings resistant to blister rust infection.

Farther north at Latour State Forest another cooperative study, in this case with the University Department of Plant Pathology, has been initiated to advance our knowledge of the growth habits of dwarf mistletoe on red and white fir.

Forest Practice Regulations

During 1958 a total of 1,526 permits to operate in timber harvesting were issued by the State Forester in accordance with requirements of this State. This number indicated a slight decline, or what might be termed a leveling off in the intensive lumbering operations which have steadily and rapidly increased since the second World War. Applicants for permits in 1958 reported a total of 5.3 billion board feet of timber as commercially harvested during 1957. In 1957 the Legislature provided for a continuing permit rather than annual registration by timber operators.

Division field officers made 2,549 inspections of logging operations during 1958 to check compliance with fire protection requirements and harvesting reg-

ulations set forth in the Forest Practice Rules of the four legally constituted forest districts of California. A total of 1,411 infractions of rules were reported, mostly involved with failure to dispose of snags and the failure to file fire plans as required. In addition to infractions of the rules there were 655 violations of fire statutes.

The responsible members of the timber industry have always been sincerely interested in obtaining full compliance with the Forest Practice Act. Actually, the rules are essentially the handiwork of industry representatives appointed to membership on the statutory Forest Practice Committees. Currently, these committees are studying proposed revisions in the basic rules. Through their influence and the administrative action of Division personnel, many of the infractions of rules were corrected without recourse to legal procedure.

State Forests

Of the eight State Forests, the four largest, embracing a total of 69,000 acres, offer practically all of the forest products that reach the commercial market as lumber, Christmas trees, poles and so forth. The four lesser forests involve only 1,188 acres and are used in other ways. Although cash income from the State Forests amounted to \$561,652 in 1958, and in the course of a dozen years has approximated 2.8 million dollars, the areas have been established for a purpose considered even more important. Experimentation and demonstration in good forest practices, with proper consideration for economic as well as silvicultural factors, are of primary importance. Some 29.4 million board feet of timber were harvested from State Forests during 1958.

Research

Several references have already been made to investigations and observations into the manner of improving our working methods. The University investigation of plant physiology to improve reforestation by planting was one such. Sometimes these studies have been conducted while the practical work was in progress, as noted in the initial attacks on wildfire by aircraft or the observations of new plant propagating methods at State nurseries. One continuous interest of Division personnel has been the improvement of automotive and other mechanical equipment, especially equipment used on the fireline. For example, two appliances developed during several years of field testing involving new methods of handling firetruck hose have proved themselves to the extent that private manufacturers have this year started producing them for general use.

Other than such important but casual field testing and observations, the Division is permitted through specific appropriation to engage itself in several intensive research projects. Fortunately, related agencies with similar interests and sometimes the special talents have joined with the Division to produce the most reliable results in the most efficient manner.

The School of Forestry at the University of California has undertaken to investigate the old and difficult problem of forest fire protection economics on behalf of the Division. The County of Sonoma has been selected as the field laboratory in this effort to determine the minimum and maximum fiscal limitations which may be applied to a fire protection organization.

Fire weather as a vital factor in the prediction, prevention, and control of fire is being approached on three fronts. Division of Forestry personnel are very much engaged in "cloud nucleation for lightning prevention", with

assistance from the U. S. Weather Bureau, the U. S. Forest Service, the California Forest and Range Experiment Station and the State Department of Water Resources. The object of this experiment is to dissipate lightning energy in clouds by seeding with silver iodide nuclei.

Another weather study in which the U. S. Weather Bureau, Forest Service, and Experiment Station are working partners is the refinement of a so-called "burning index" which has received partial and preliminary field testing during several fire seasons. The project embraces short period weather forecasts in terms of relative fire risk and hazard. Its foundation rests upon voluminous fire history records and intensive recordings of current weather for small geographic compartments having predictable fire behavior patterns.

"Fire climate" might be considered as a side investigation of the burning index project in respect to hazardous weather peculiarities within specific areas, and especially areas known for abrupt and presently unaccountable shifts in weather conditions, such as shifting air currents. The California Forest and Range Experiment Station is contracting to undertake specific studies of designated areas on lands protected by the Division.

With the cooperators mentioned above and also with the Los Angeles County Fire Department, the Division has been intensively engaged in a project called "fuel break". In the mountains of Southern California every presently conceivable method of eliminating and reducing vegetative fuel in patches and strips has been investigated with the very practical intent of improving upon the expensive and sometimes inadequate ridgeline firebreaks which have been commonly constructed by hand in that area for more than a half century.

Research projects are also currently underway to determine seed tree effectiveness, forest growth prediction, ecology of bark beetles, utilization of California hardwoods, management of Southern California brush watersheds, and interception of water by herbaceous vegetation. These studies are conducted under contract with the University of California and the California Forest and Range Experiment Station.

Publications in 1958

Other than the mimeographed reports emanating from the several offices of the Division, such as the detailed fire records, reports on range improvement, nursery production, and general forest management subjects, the Division did not have any major work printed.

Excerpts of fire prevention laws to the extent of 250,000 copies in a small 14-page hand-out were printed for inclusion with permits issued for burning. This method of disseminating information regarding the legal restrictions upon the use and abuse of fire was the first educational venture undertaken by State Government in the field of fire prevention, having been initiated 70 years ago and often repeated.

A processed 28-page booklet describing the general methods and results of recent forest tree plantations in Southern California was written by Forest Technician Paul C. Sischo. This Tree Planting in Southern California deals primarily with the planting successes and failures of the Division of Forestry since 1950.

In cooperation with the California Forest and Range Experiment Station there was lithographed by the Division a 27-page booklet describing the purpose, extent and methods involved in Soil-Vegetation Surveys in California.

The same agencies also cooperated in the publication of a 6-page popular pamphlet called More Good Water.

With the School of Forestry, the California Forest and Range Experiment Station and Division also arranged for the State Printer to produce an attractive 33-page document entitled Wildland Research in California. This booklet, made easily understandable by pictures and graphs, is intended to give a quick and accurate review of the present knowledge and the scope of vitally needed research in respect to eight major aspects of forest land and products conservation and improvement.

Outside of official publications the Division and Board of Forestry were represented in the California Livestock News of March, 1958, by L. T. Burcham and Paul Furbush in their article "Livestock Feed May Be Made from Ground Brush." The Journal of Forestry in April departed from its usual technical field to print an historical article "John Sutter, Lumberman," by C. R. Clar.

COVER PICTURE of this REPORT shows:

PBY plane assisting ground forces by dropping chemical fire retardant solution on a "hot spot" of a wildfire in the valuable watersheds of Los Angeles County in 1958.

L.A.Co. Fire Dept. photo

CRC*LEN 1.6M 5/59

The same committee also cooperated in the publication of a 6-page popular

pamphlet called More Good Water.

With the School of Forestry, the California Forest and Range Experiment

Station and Division also arranged for the State Printer to produce an

attractive 32-page document entitled Wildland Research in California. This

booklet, made easily understandable by pictures and graphs, is intended to

give a quick and accurate review of the present knowledge and the scope of

vitality needed research in respect to eight major aspects of forest lands and

products conservation and improvement.

Outside of official publications the Division and Board of Forestry were

represented in the California Livestock News of March, 1955, by J. T. Burdick

and Paul Burdick in their article "Livestock Feed May Be Made from Ground

Brush". The Journal of Forestry in April reported from the usual technical

field to print an historical article "John Sutter, Lumberman" by G. R. Clark.

Large and significant contributions were made in the past year.

Investigations were the same as in the past year and of equal importance.

Continuing work in the past year was of equal importance.

COVER PICTURE OF THIS REPORT shows:

FBI plane assisting ground forces by dropping

chemical fire retardant solution on a "hot spot"

of a wildfire in the valuable watershed of Los

by Los Angeles County in 1955.

L.A.C.C. Fire Dept. photo.

attribution of aerially applied water.

to maintain the fire control and prevent the fire from spreading.

and the fire control.

and the fire control.

and the fire control.

CHOC-111 1.6M 5/55

attribution of aerially applied water.



7-14-59

Distribution:

- 2 - Main Co.
- 1 - J. S. F.
- 1 - Alder C. C.
- 1 - Ch. C. " "
- 1 - High Rock C. C.
- 1 - P. F. C. C.
- 11 - 16 unt.
- 4 - Lake
- 8 - Meadows.
- 5 - Napa
- 5 - Sonoma
- 1 - C. W. F.
- 1 - L. R.
- 1 - P. B. F.
- 1 - R. M. M.
- 1 - S. M. S.
- 1 - G. S.
- 1 - L. S.
- 1 - G. B.
- 1 - D. O. Library